

ART. III.—NERVOUS EXHAUSTION OR NEURASTHENIA IN ITS BODILY AND MENTAL RELATIONS.

ONE OF A COURSE OF LECTURES ON THIS SUBJECT, DELIVERED
AT THE CHICAGO MEDICAL COLLEGE, BY J. S. JEWELL,
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LECTURE I.

ANALYSIS.—Definition—General prevalence—Not a new disease—Names which have been applied to it—Two classes of Phenomena, bodily and mental—*Motor Phenomena*, loss of power and augmented reflex excitability—Striped and unstriped Muscle—Vaso-motor reflex, exalted—Effects of same, direct and indirect—Heart—Small vessels—Secreto-motor nervous system—Its reflex excitability increased—Loss of will power or control—of capacity to do or endure in the sphere of mental action—*Sensory Phenomena*, sensibility of all kinds exalted—*Hyperesthesias* of general and special sense—Undue emotional excitability—*Melancholia*—Summary.

GENTLEMEN: The subject of the next few lectures, is one of great practical importance. It is *Nervous Exhaustion*, or *Neurasthenia*. This latter term seems not inaptly chosen, and means, of course, lack of nerve-force, or nervous exhaustion. It does not mean, however, the temporary exhaustion produced in a healthy, strong person, suddenly, by fatiguing effort, and which may be repaired by a full meal and a night's sleep. It is rather the comparatively permanent exhaustion which is the result of prolonged over-strain, mental or physical or both, too little rest, insufficient or defective nourishment, long continued, until the substance of the nervous system, and often of the blood which nourishes it, is wasted or worn away, far below healthy limits, entailing as a necessary consequence, a corresponding *loss of nerve power*, and in most cases *morbid exaltation of nervous sensibility*, not to speak at present of other important, though auxiliary elements of such cases. The two factors I have placed in the foreground are the essential ones in every case of Neurasthenia. They are, as a

rule both present, loss or lack of power always is so. Neurasthenia may be exhibited in the sphere of the mind as in weakness of thought, but especially weakness and vacillation of will, or in other words, loss of control and lack of decision; in unduly excitable and unhealthy emotion, generally of a distressing or depressing character; or in the sphere of the simple physiological activities, especially in feebleness and irregularity of muscular action; exaltation of physiological sensibilities, of any or all kinds, but especially *reflex* excitability; the circulation of the blood is also, as a rule, unsteady and fluctuating, the action of the heart and small muscular vessels being very easily disturbed by multitudinous causes, mental and physical. Then again it may be general, extending to the whole nervous system, or it may be strictly localized, involving only limited parts of the nervous system, while other parts do not participate to the same extent or at all. Again it may be hereditary, or congenital, especially the former. People are being born into the world daily, to begin, live, and end life, neurasthenic, or at least to be brought easily into that state; persons who have from the beginning weak, tricky nervous systems, either as a whole or in some of its parts. On the other hand, there are persons to be met with everywhere these times, at all periods in life, and of both sexes, who are naturally healthy, as this phrase goes, who from prolonged over-exertion, mental or physical, or from being under a load of care or distress, or from prolonged loss of sleep, or loss of appetite, or from insufficient food, or on the contrary, excessive waste, as in hemorrhages or diarrheas, or on account of some irritating, wasting disease, etc., suffer a loss of balance in their nutrition, so that waste for a long time preponderates over repair, to the exhaustion of the nervous energies, and a great gain in mobility, or "shakiness" of the nervous system, especially the nervous centres.

It may form a disease (as it must be called) by itself, or it may and it does form a more or less conspicuous element in a great variety of diseased states, one which it behooves you all to learn to detect and estimate. It is often overlooked or under-estimated, and often is the obscure and all-important element in cases which are widely different in appearance. It

is the undertone in the picture in a vast number of cases of "heart disease," "brain disease," even "softening" of the brain, of hysteria, epilepsy, melancholia, neuralgias, paresis, mental weakness, feeble circulation, insomnia, &c., &c. It prevails at all periods in life, and in both sexes. Instead of becoming less common, it is becoming more so, as time passes, and as people as a whole become more sedentary in habits, more intellectual in activities, more engaged by occupation or by culture, so as to augment the sensibilities at the expense of the forces or power of the nervous system.

No physician can practice medicine and not meet with it, and the minority is a small one, in the profession as a whole, to recognize it clearly, and comprehend its underlying conditions, as it seems to me they may be.

It is not a new form of disease. It has been long recognized, and has had widely different names applied to it. And yet, as already said, but few recognize it.

It has been extensively written upon by certain French authors under the name of *nervosisme*, especially by Bouchut. It has been treated of by MM. Sandras and Bourguignon, under the name of the *nervous state* (l. *etat nerveux*), by Cerise, as *nervopathie proteiforme*, as *nervospasme* by Brachet, &c. Among German writers it has been recognized, at least in some of its forms (to go no farther back), since the time of P. Franck, as *spinal irritation* (Stilling and others), as *Nerven-erethismus* (Henle, *Rationellen Pathologie*), *Nervosismus*, &c., by others. In England it has been described since at least the time of Robert Whytt, under various names, such as spinal irritation, nervous exhaustion, neurasthenia, neuræmia (Laycock), cerebrasthenia, &c. In our own country, it has been partly discussed by various writers, among them being Drs. Hammond, Mitchell, Beard, and others. But it is no part of my present purpose to trace the history of the literature of the subject. I have wished merely to inform you that it has been long recognized and often written upon, and hence is not a new form of disease. It is my purpose rather to give you the *results* of my own studies, not only into the writings of others, but much more of my own practical observation and experience of the disease, if it may be called so.

In what I may have to say, I will describe it with some particularity in its more important relations. In doing this I will first speak to you of its signs or symptoms. In the next place I will try to analyze the phenomena so as to get at their most simple classification and expression. This much done, I will endeavor to show what are the organic conditions which may be supposed to underly the symptoms. Finally, I will endeavor to point out to you the causes and treatment of the, at first sight, complex phenomena which may be grouped under the head, *Neurasthenia*.

In the endeavor to describe the visible or palpable phenomena of neurasthenia, it may be first noticed, that they fall into two great groups, *bodily* (somatic) and *mental*. The same organic conditions underlie both classes of phenomena, the differences being in the parts of the nervous system in which the morbid states exist. Having distinguished two classes or groups of phenomena belonging to nervous exhaustion, I will call your attention to the class of bodily symptoms. This distinction of the one group from the other, it must be remembered, is for practical purposes only. I would not have you for a moment suppose the distinction is given as a radical one, whatever may be the truth as to a substantial difference between mind and body. To attempt to decide that question is outside of my present purpose. The bodily symptoms or signs of neurasthenia fall chiefly into two groups, *motor* and *sensory*, for in the sense I now employ the term, neurasthenia is *a diseased condition of the nervous system par excellence*. Belonging partly to the motor and partly to the sensory spheres, but worthy on some accounts of being considered separately from either, *is an easily disordered circulation*.

1. *Motor phenomena.* These consist always in loss of muscular power and endurance, and as a rule comprehending exalted reflex excitability toward muscular action. The patient shows a permanent lack of muscular power, its volume, so to speak, being less than it is in the same person in health. This may depend, of course, to some extent on the condition of the muscle itself. If from disease, or from over-use, or from defective or insufficient nourishment the volume of a muscle

is diminished or its structural integrity impaired, no matter what may be the condition of the nervous system back of it, the power of the muscle will be under par. It is necessary to take this circumstance into the account in the study of neurasthenias, as indicated by muscular weakness, for this latter is not always a measure of the former. The same may be said in a less degree, perhaps, of *endurance* in muscular action—or the ability to continue in exercise for a certain length of time without marked fatigue or exhaustion. In some cases an individual, even in apparent health, and with every appearance of a normal volume of power, is speedily exhausted in the progress of moderate muscular exercise. The stock of energy which appears as if ample to begin with, is soon exhausted, and the individual is said to lack “bottom” or endurance. In such a case there is a real neurasthenia, apparent at last, though it may not be so at first.

The distinction between the volume of nerve power which may be available for immediate effort, and endurance, irrespective of the *latter* point, is one of some importance. For it often happens they bear no direct proportion to each other. At times a person is met with having remarkable endurance or tenacity, and a very small volume of nervous and muscular force available for immediate use, frail, weak, exhausted as permanent conditions. Such persons will often pass an ordeal in which others quite robust in appearance would perish. These points may be especially useful for you to remember and accurately estimate in making prognoses, and in laying down courses of treatment, especially in the matter of hygiene.

Then, as already said, there is *exalted reflex excitability*. This is present as a rule in all cases of nervous exhaustion of the fixed kind I am considering in these lectures, and in many cases its augmentation is remarkable, as in hysteria and chorea, which, as a rule, have in them as a major factor, neurasthenia, as I shall soon try to show you.

You will, of course, all recall what reflex action is, and its incalculable importance in the physiology of the nervous system, especially in its relations to muscular action. I will assume that you are acquainted with its facts and laws. But I may remind you of the fact that it implies in its simplest

expression, two nerve fibres and a nerve cell—one fibre from a peripheral region leading into the cell, and another out of the cell, to some part, say a muscle, the action of which is capable of being affected by an impulse from the cell, emitted in answer to an impulse conveyed into it by the ingoing fibre. Now if the impulse going out from the cell to the muscle is stronger or more easily aroused than it should naturally be, one or both of two things may be true: Either the ingoing fibre is more strongly excited than it should be, or the nerve cell is for some reason more responsive than it should be. Both of these circumstances may be present, of course, but usually only one, perhaps. But whatever may be said as to the strength of the peripheral excitation, in any case of neurasthenia in which reflex excitability is exalted, it must be said that the condition of the cell, as regards its nutrition, is one which makes it more responsive than when normal. As the cell becomes leaner and less firm in texture, it becomes more excitable than it should be when more solid and perfect in its intimate structure. Under such circumstances very slight causes will provoke reflex muscular action. A sudden or unusual sound, impressions made on the eye, impressions of various kinds made on the skin, excitation of the alimentary mucous membrane, or of the genito-urinary or other sensitive parts of the body; and besides these, excitations from the cortex of the brain descending the fibres of the corona radiata, and other bundles of fibres in the interior of the brain, to the apparatuses of cells of the basal system of ganglia, of the medulla and spinal cord, often beget reflex action, which, when it occurs, is apt to be wide-spreading, and is said to be due to emotional or mental disturbance.

From all these sources the excitations may come to provoke reflex muscular action, and the readiness with which it is excited depends on the condition of the nutrition of the nervous system, more particularly the centres, a condition which certainly obtains in neurasthenia.

But reflex action is not alone manifested in the voluntary muscles, but in other and even more important ways. In no other way is it shown in a more striking manner than in a disturbed circulation. As you are now aware, the

heart sustains not only very important relations to the medulla and spinal cord, through the medium of the vagus, accelerator, depressor and vaso-motor nerves, but it has an automatic, and as we may say, *intrinsic* nervous apparatus of its own. Then again, you will remember that the small muscular blood-vessels, especially the arteries, are all of them provided in all probability with peripheral nervous apparatuses, sown broadcast throughout the body, upon which the vessels depend in a most important sense for their *tonus*, or tightness of embrace of the column of blood passing through them. These multitudinous little nervous apparatuses act as do other parts of the nervous system, in a reflex way, and hence they are liable to become more irritable and responsive to impressions of one kind or another, as well as other parts of the nervous system. But farther, these peripheral vaso-motor mechanisms are connected with the grey matter of the spinal cord and medulla by nerve fibres, perhaps by two kinds of fibres, one of them so acting on the peripheral apparatus as to increase, and the other so as to diminish its activity. The former pass under the name of vaso-constrictors, the latter under that of vaso-dilators. The central vaso-motor apparatuses of the cord and medulla, and the nerves just described as proceeding outward from them, may be, and are affected with remarkable ease and frequency in a reflex way. In this manner the action of the heart may be disturbed so that palpitations, variations in the force and frequency of the pulse, &c., may and do occur. Also variations in the tonus, or condition of contraction of the small muscular blood-vessels may occur, either throughout the whole body or in some limited portion of the same, all by reflex nervous action. These varying conditions of the circulation depending on the condition of the vaso-motor nervous system, and if extreme in extent or in degree, may give rise to a vast variety of symptoms depending on the seat, or degree, or duration of the circulatory disorder. This kind of disorder is almost characteristic of neurasthenia.

Vaso-motor reflex excitability is in general conspicuously exalted. Comparatively slight impressions, whether physical or mental, may profoundly modify, in a reflex way, the action

of the vascular system, and through it all the functions of the body, since all depends, in a certain sense, on a due distribution of the blood. A word, an unusual or a sudden sound, a strong light, impressions of cold and heat on the skin, or of other kinds, irritation of the alimentary tract, from the mouth downwards, irritation of the genito-urinary apparatus of all kinds and from all causes, all emotional states, if violent or sudden in occurrence, all muscular or mental effort if violent or long continued, all exciting agents of a medicinal kind, &c., &c., may affect the action of the vaso-motor nervous system, and through it the action of the heart and muscular vessels, and so on to the end of the chain of evil consequences which follow, and act, and re-act on each other often in a surprising manner. In this case they can be chiefly traced back to a worn, exhausted, and hence unstable, over-sensitive, vaso-motor nervous system.

The symptoms which grow out of the fluctuating circulation, as just described, are legion. I could not pretend to enumerate them fully. But, if you will, once for all, get clearly in your minds the notions I have advanced in regard to reflex vaso-motor action, and its exaltation in neurasthenia, I feel pretty sure you will soon learn to recognize and construe them correctly.

Then again, the *secretions* are as really under the control of the nervous system as the muscular tissue is of the blood-vessels. There are secretory nerves, if not a secretory nervous system. The researches of Bernard, Kuelme, Prevost, Adamkiewicz, Luchsinger, Elischer, Nawrocki, Vulpian, and many others, have established beyond question, so it seems to me, the existence of a *secreto-motor* nervous system, not only a central spinal and medullary apparatus, but also of nerves which go out from the same to the various secreting organs of the body, and the actions of which are, in an important sense, under the control of these nerves. But I cannot at present go into this subject, only so far as will enable me to show you that the secreto-motor nervous system may be unduly sensitive, and may be affected in a reflex way as certainly as the musculo-motor nervous system can be. As examples, I would refer to the notable variations of the urine in quantity which occurs

in persons when in a neurasthenic state. This is especially so in cases of neurasthenia in nervous females, in which there are certain symptoms growing largely out of the neurasthenic state, called hysterical. I would also call your attention to the profuse "nervous sweats," which are often seen in neurasthenic persons under irritation or excitement. Besides these, other secretions are affected, either in the way of increase or decrease, under such circumstances that we seem obliged to refer them to increased mobility of the nervous system, especially to increased reflex excitability of the nervous system, which certainly is a prominent element in neurasthenia.

Then there is, generally speaking, increased sensibility, whether *general* or *special*.

The skin is as a rule hypersensitive as a whole or in places. In some extreme cases a touch on almost any part of the body is painful, or, at least, disagreeable, a slight touch being often more painful than firm pressure. The increase in cutaneous sensibility may relate only to tact or touch, but is more likely to relate also to the pain sense and temperature sense.

Sudden changes in temperature, especially from warm to cold, produce painful shocks or impressions, far more than in health in the same individual. Very slight injuries to the surface are comparatively more difficult to be borne than in a healthy condition of the nervous system. It is more easily disturbed or shocked, because it is less solid and resisting than in health. Cutaneous sensory impressions arouse reflexes more easily and of a wider range than we see in health under the same circumstances. This partly arises from the loss of *inhibitory* power of the nervous system, or of that control of the higher nervous centres over the reflex actions of lower centres. While the reflex excitability of these latter is exalted, as I have said already, the power of restraint, control, guidance, which higher centres exert over lower ones, is weakened. This form of nervous force is diminished in neurasthenia as well as other forms of nerve force. All these various forms of nervous force are at bottom the same. The difference is not in nature, but in modes of manifestation. *Loss of control* or of will power is, indeed, one rather clear mark of neurasthenia. There is also as a rule undue sensitiveness of

the special senses. Photophobia, more frequently asthenopia and undue, even painful acuteness of hearing, is very generally present. Smell and taste, especially the former, are often morbidly acute, but not in so striking and disagreeable a manner, nor with the same constancy as the other forms of sensibility mentioned.

As regards mental action, there are several common features worthy of particular notice. One of the most striking of these is loss of power, especially will power, and the ability for prolonged or severe effort. Such a person can as a rule neither do nor endure what was possible when in health. Cares sit heavily, and anything requiring much thought or calculation, and hence involving the expenditure of much brain force, becomes difficult or practically impossible. The memory is slow or defective as compared with what is natural to the individual. Then again, another feature is excessive emotional excitability, especially in a painful or depressing way. Such persons are comparatively too easily affected. Slight circumstances annoy or distress them, or excite them. They are especially apt to take a depressing view of their business affairs or of their own health. They feel themselves often unable for the duties of life, and may and do readily fancy themselves the subjects of different serious or fatal diseases. They have very frequently the "blues," or mental depression, all the way from a slight temporary despondency to the most persistent and profound melancholia, which may assume every possible form of this distressing disorder. The neurasthenic patient cannot sleep well, in the majority of cases is easily wakened, and when sleeping, not uncommonly has dreams at times quite unpleasant.

Such, gentlemen, are the principal morbid phenomena which are manifested in neurasthenia. It is not an exhaustive description of them. It is only a general outline derived from a comprehensive analysis of such cases. To undertake to describe the various kinds of cases with any kind of fullness would be an impracticable task. But it is possible by analysis and classification for us to describe the principal phenomena of this protean and complex affection. They may be summarized as follows :

I.—SOMATIC OR BODILY PHENOMENA.

1. Exalted physiological sensibility, general and special, including reflex excitability.

2. Permanent lack of nervous power, including power of inhibition.

3. Beneath all this, impaired nutrition, in which there is a more or less permanent preponderance of waste over repair, especially in the nervous structures of the body.

II.—MENTAL PHENOMENA.

1. Exalted emotional susceptibility and mobility, especially in the direction of depression.

2. Loss of will power or power of control, and in general not of mental *sensibility*, but of mental *power*, to do or endure within the sphere of mental life and action.

3. Underlying all of which are combined nutritional and circulatory lesions, especially of the brain, which impair the substance, diminish and render unsteady the exercise of the power of the brain, and finally exalting its sensibility.

Under one or other of these heads, may all or most all the phenomena of neurasthenia, or nervous exhaustion, be ranged.

Now let these statements be kept in remembrance, and they may serve to guide us in the next lecture when I shall try to show you what are the organic conditions underlying these and similar symptoms, and morbid conditions.*

* There will be two or three more of these lectures, all of which were given during the course of instruction in Nervous and Mental Disease in the Chicago Medical College, for the Session of 1878-9.